

Automatic Burst Mode I/Q Gain and I/Q Phase Calibration Using Packet Based-Fixed Correction Coefficients

This application is a continuation in part of 10,350,622, filed on January 24, 2003.

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BACKGROUND OF THE INVENTION

Field of the Invention

10 The invention relates generally to signal receivers having in-phase (I) and quadrature phase (Q) signal processing and more particularly to methods and apparatus for balancing I/Q gain and I/Q phase in a signal receiver.

Description of the Prior Art

15 Most modern radio signal receivers estimate the data that was transmitted by processing in-phase (I) and quadrature phase (Q) signal components. The I and Q signals should have a phase difference (I/Q phase) of 90° at the carrier frequency of the incoming signal and a gain ratio (I/Q gain) of unity. However imperfections in the analog circuitry used in the radio frequency (RF) quadrature downconverters in most modern signal 20 receivers cause the I/Q gain and I/Q phase to be out of balance (I/Q gain not equal to one and I/Q phase not equal to 90°). These imbalances cause a degradation in bit error rate (BER) in estimating the transmitted data.

25 Existing signal receivers use several methods for correcting I/Q gain and I/Q phase imbalances within the receivers. In one method, an offline test signal is used during manufacture or installation to align the I/Q gain to unity and the I/Q phase to 90° in the signal receiver. However, the performance of the receivers using the test signal method is limited by drift in the analog circuitry after the alignment. This limitation is reduced by